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May, 2010

INSTALLATION AND SERVICE MANUAL
evaporative cooler
model series “H” & “O”

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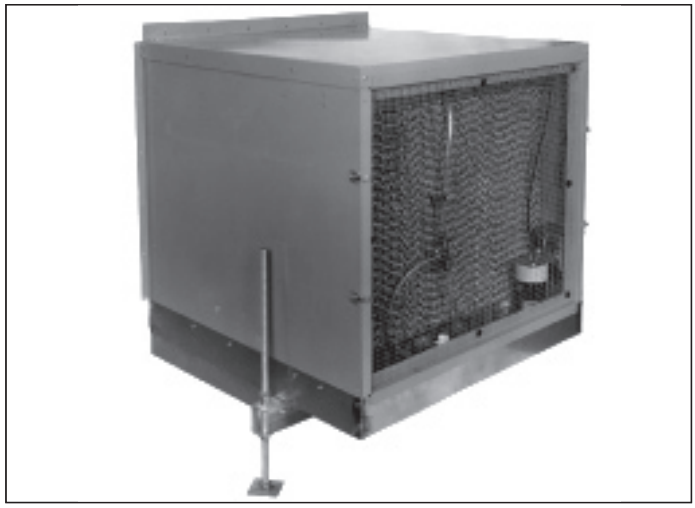
9900100



⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death, and could cause exposure to substances which have been determined by various state agencies to cause cancer, birth defects or other reproductive harm. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

FOR YOUR SAFETY

The use and storage of gasoline or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.

IMPORTANT

1. The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these units must be performed by a qualified installation and service agency.
2. These instructions must also be used in conjunction with the Installation and Service Manual originally shipped with the appliance, in addition to any other accompanying component supplier literature.

Inspection on Arrival

1. Inspect unit upon arrival. In case of damage, report it immediately to transportation company and your local factory sales representative.
2. Check rating plate on unit to verify that power supply meets available electric power at the point of installation.
3. Inspect unit upon arrival for conformance with description of product ordered (including specifications where applicable).

THIS MANUAL IS THE PROPERTY OF THE OWNER.
PLEASE BE SURE TO LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.

SPECIAL PRECAUTIONS / TABLE OF CONTENTS / SI (METRIC) CONVERSION FACTORS / UNIT LOCATION / UNIT LIFTING

SPECIAL PRECAUTIONS

THE INSTALLATION AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL MUST BE FOLLOWED TO PROVIDE SAFE, EFFICIENT AND TROUBLE-FREE OPERATION. IN ADDITION, PARTICULAR CARE MUST BE EXERCISED REGARDING THE SPECIAL PRECAUTIONS LISTED BELOW. FAILURE TO PROPERLY ADDRESS THESE CRITICAL AREAS COULD RESULT IN PROPERTY DAMAGE OR LOSS, PERSONAL INJURY, OR DEATH. THESE INSTRUCTIONS ARE SUBJECT TO ANY MORE RESTRICTIVE LOCAL OR NATIONAL CODES.

HAZARD INTENSITY LEVELS

1. **DANGER:** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
2. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
3. **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.
4. **IMPORTANT:** Indicates a situation which, if not avoided, MAY result in a potential safety concern.

⚠ WARNING

1. When servicing or repairing this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting Modine Manufacturing Company. Refer to the rating plate on the unit for complete unit model number, serial number, and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.
2. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
3. Do not submerse the pump motor in water. The evaporative cooler pump motor is not submersible.

⚠ CAUTION

Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.

IMPORTANT

1. To prevent heat exchanger failure, do not operate the evaporative cooling unit in air streams with temperatures below 40°F. Operating the unit in temperatures less than 40°F will cause icing. Normally ice will not harm the media, but it can block the airflow and possibly crack the plumbing.
2. Start-up and adjustment procedures should be performed by a qualified service agency.
3. The proper media direction must have the 45° flutes slope down toward the air entering side. The 15° flutes must slope down toward the air leaving side. See Figure 8.2 for media direction.
4. To check most of the Possible Remedies in the troubleshooting guide listed in Table 9.1, refer to the applicable sections of the manual.

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Table 2.1 - SI (Metric) Conversion Factors

To Convert	Multiply By	To Obtain
"W.C. (inches water column)	0.24	kPa
psig	6.893	kpa
°F	subtract 32 and then multiply by 0.555	°C
inches	25.4	mm
feet	0.305	meters
CFM	0.028	m^3/min
CFH	1.699	m^3/min
btu/ft^3	0.0374	mJ/m^3
pound	0.453	kg
btu/hr	0.000293	kW/hr
gallons	3.785	liters

UNIT LOCATION RECOMMENDATIONS

1. When the unit is equipped with an evaporative cooler, the module is factory installed and wired. Refer to Literature 5-572 or AIR5-572 - Installation and Service Manual for recommendations.
2. When locating the unit, consider general space and cooling requirements and availability of water supply/drain and electrical supply.
3. Be sure the structural support at the unit location is adequate to support the weight of the unit.

UNIT LIFTING

When the unit is equipped with an evaporative cooler, the module is factory installed and wired. Four 3/4" holes at the extended ends of the unit mounting channels are supplied to facilitate lifting the unit. Refer to Literature 5-572 or AIR5-572 – Installation and Service Manual for recommendations.

UNIT INSTALLATION

Refer to Literature 5-572 or AIR 5-572 – Installation and Service Manual for general installation instructions. The following are additional requirements for the evaporative cooling section.

Unit Leveling

For proper operation, the evaporative cooler must be installed in a horizontal level position. The evaporative cooler is provided with two leveling feet with 20'' leveling adjustment range (See Dimensions). Once the blower and duct furnace section has been leveled, the evaporative cooler must be leveled by adjusting the leveling screws until the leveling feet reach the roof or slab. The support under each leveling foot must be capable of carrying 1/4 of the operating weight of the unit (See Weights).

Determine Maximum Design Water Flow Rate

Before running the water supply line to the evaporative cooler, the following procedure is to be used to calculate the maximum design water flow rate. Example calculations will be used based on the following conditions:

- Model Size 200 (7.5 ft^2 media face area from Table 7.1)
- 12" Media Depth
- 4500 CFM
- Location: Phoenix, AZ, ASHRAE Design Temps:

  Entering Dry Bulb Temp (EAT_{DB}) = 108°F
  Entering Wet Bulb Temp (EAT_{WB}) = 69°F

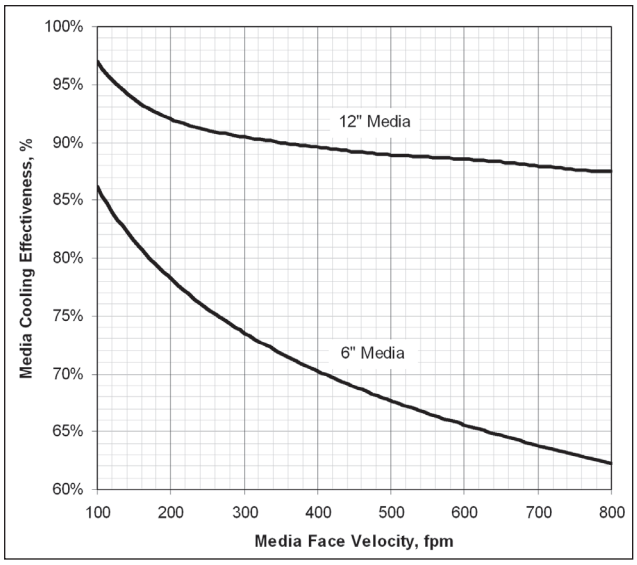
1. Calculate the Media Face Velocity:

   Media Face Velocity = CFM / Media Face Area
   Example:
   Media Face Velocity = 4500 / 7.5 = 600 fpm

2. Find Cooling Effectiveness from Figure 3.1:

   Example:
   The 12" media effectiveness curve is approximately 88.5% at 600 fpm

Figure 3.1 - Evaporative Cooling Effectiveness



3. Calculate the Leaving Dry Bulb Air Temp (LAT_{DB}):
   LAT_{DB} = EAT_{DB} - Effectiveness x (EAT_{DB} – EAT_{DB})
   Example:
   LAT_{DB} = 108°F - 88.5% x (108°F – 69°F) ≈ 3°F

4. Calculate Approximate Evaporation Rate (GPM):

$$\text{Approx. Evaporation (GPM)} = \frac{\text{CFM x } (EAT_{DB} - LAT_{DB})}{500{,}000}$$

Example:

$$\textit{Approx. Evaporation (GPM)} = \frac{\textit{4500 x (108°F - 73° F)}}{\textit{500,000}} \approx \textit{0.3 GPM}$$

Water Supply Connection

The water supply is located on the side of the evaporative cooler (See Dimensions). The water supply must be run to the float valve connector (1/2" NPT Water Inlet) on the unit. The 1/2" supply line may be either galvanized or copper pipe. Verify that the proper water supply capacity is available by referring to the previous section.

Use a municipal water supply or well water which maintains a pH between 6 and 9. Do not use untreated surface water as the water supply. If equipment is to be supplied with well water, it is recommended that a water treatment company investigate possible requirements to control mineral deposits. In certain locations, even municipal water has enough minerals to warrant consideration of water treatment.

The water supply line must be furnished with indoor inlet and drain valves to prevent freezing and rupture when the temperature drops below 32°F. See Figure 3.2.

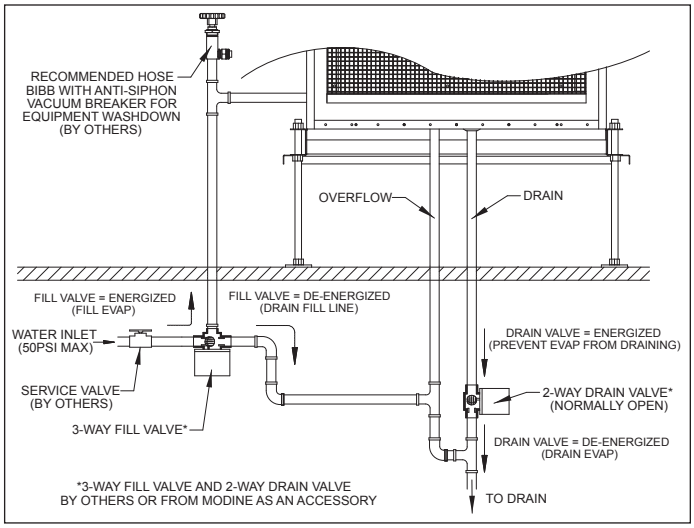
Drain Connection

The drain connection is located on the bottom of the evaporative cooler (See Dimensions). Provide a 1/2" manual valve in the drain line to permit draining and cleaning of the evaporative cooler tank.

Overflow Connection

The overflow connection is located on the bottom of the evaporative cooler (See Dimensions). When permitted by local codes, the overflow connection can be left open to drain to the nearest roof drain for outdoor units. This connection will have a constant water flow because it is used to drain the bleed. For bleed water flow rates, refer to Start-up Procedure – Bleed Adjustment. If the constant water flow on the roof is not desired or permitted by local codes, piping should be provided from the 1/2" NPT connection to the building drain line.

Figure 3.2 - Field Supplied Evap Cooler Piping


RECOMMENDED HOSE BIBB WITH ANTI-SIPHON VACUUM BREAKER FOR EQUIPMENT WASHDOWN (BY OTHERS)
OVERFLOW
DRAIN
FILL VALVE = ENERGIZED (FILL EVAP)
FILL VALVE = DE-ENERGIZED (DRAIN FILL LINE)
WATER INLET (50PSI MAX)
DRAIN VALVE = ENERGIZED (PREVENT EVAP FROM DRAINING)
SERVICE VALVE (BY OTHERS)
2-WAY DRAIN VALVE* (NORMALLY OPEN)
3-WAY FILL VALVE*
DRAIN VALVE = DE-ENERGIZED (DRAIN EVAP)
*3-WAY FILL VALVE AND 2-WAY DRAIN VALVE BY OTHERS OR FROM MODINE AS AN ACCESSORY
TO DRAIN

UNIT INSTALLATION / START-UP PROCEDURE

Electrical Connections

Refer to Literature 5-572 or AIR5-572 - Installation and Service Manual for electrical installation instructions and unit amp draws. The evaporative cooler is factory wired. Two copies of the job specific wiring diagram are provided with each unit, one located in the duct furnace electrical junction box and one in the electrical section of the unit. Refer to this diagram for all wiring connections.

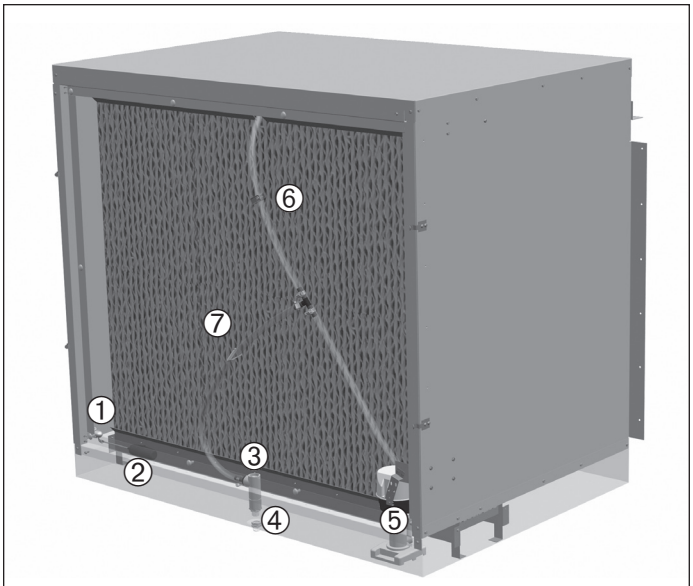
START-UP PROCEDURE

IMPORTANT

1. To prevent heat exchanger failure, do not operate the evaporative cooling unit in air streams with temperatures below 40°F. Operating the unit in temperatures less than 40°F will cause icing. Normally ice will not harm the media, but it can block the airflow and possibly crack the plumbing.
2. Start-up and adjustment procedures should be performed by a qualified service agency.

Refer to Literature 5-572 or AIR 5-572 – Installation and Service Manual for general start-up instructions. The following are additional requirements for the evaporative cooling section (reference Figure 4.1).

Figure 4.1 - Evaporative Cooler Components



① Water Inlet Valve (Float Valve)
② Inlet Valve Float Arm and Float
③ Overflow
④ Drain (bottom panel shown as clear for illustrative purposes)
⑤ Pump Motor
⑥ Media Supply Line and Flow Restrictor
⑦ Bleed Line and Flow Restrictor

1. Turn off power to the unit at the disconnect switch.
2. Check that all water connections are weatherized.
3. Remove the birdscreen.
4. Remove the hose clamp and bleed tube from the overflow tee. Cover the tee opening to prevent the tank water from draining.
5. Tighten the bleed line flow restrictor (See Figure 5.1) completely. Then loosen the screw 2 counterclockwise turns.
6. Open the water supply valves and close the drain valves. Refer to Figure 3.1 for valve sequence.
7. Check the water supply for adequate flow.
8. When the float valve shuts off the water supply, the depth of the water should be 2 3/4" or 1/4" below the overflow. If the water level requires adjustment, bend the float arm to provide the proper water level.
9. Check the evaporative cooler tank for leaks. If any leaks are detected, drain the tank and apply waterproof silicone sealer at the leaks.
10. Adjust the bleed line flow rate. See Bleed Line Adjustment.
11. Adjust the water flow rate over the evaporative cooler media. See Media Water Flow Adjustment.
12. Drain the tank and repeat step 8 two more times. This will flush the media of dirt obtained during shipment. It will also wash away the odor on new media.
13. Adjustment of the water flow rate over the media may have changed the bleed line flow rate. Check and readjust if necessary.
14. Replace the birdscreen.

Bleed Line Adjustment

The recirculated water in the tank must have continual bleed to prevent an excessive concentration of mineral buildup in the tank water. A high concentration of minerals will cause a buildup on the media. The surface adhesion and wicking action of the media is reduced by these deposits, ultimately causing small droplets of water to be carried off leaving side of the media.

The unit is provided with a manually adjustable bleed which will allow for continuous bleed-off into the overflow connection on the tank. The bleed rate required is dependent on the quality of water used and the rate of evaporation. As climate conditions change, the rate of evaporation may increase, thereby requiring an increase in the bleed rate. An indication of insufficient bleed is a uniform buildup of minerals on the entering air face of the media. If this condition is observed, increase the rate of bleed until the mineral deposits dissipate.

It is recommended that the bleed rate be set for the conditions of maximum water evaporation. The bleed rate is adjusted as follows:

1. With the disconnect switch in the “OFF” position, place a jumper wire between electrical section terminals 80 and 82. This will energize the pump motor when the power is provided to the unit.
2. Turn on power to the unit at the disconnect switch.
3. With the pump motor running, measure the amount of water through the bleed line. Refer to Formula 4.1 for recommended bleed line flow rates. Adjust the bleed line flow restrictor as necessary.
4. Turn off power to the unit at the disconnect switch.
5. Reattach the hose clamp and bleed tube to the overflow tee.
6. Remove the jumper wire between terminals 80 and 82.

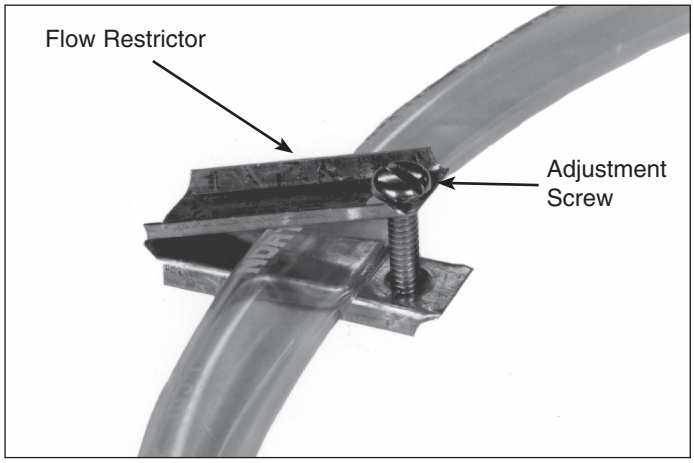
Formula 4.1 - Evaporative Cooler Water Bleed Rate

$$\text{Bleed Rate} = \frac{\text{Approx. Evaporation Rate (GPM)}}{\text{Cycle Rate}}$$

- Approx. Evaporation Rate (GPM) was calulated on page 3
- Cycle Rate = 1.5 for hard water, 3 for soft water (maximum), or 15 for soft water (minimum)

For ease of measurement, the Bleed Rate (GPM) can be converted to fluid ounces per minute by dividing by 0.0078125.

Figure 5.1 - Bleed and Media Line Flow Restrictors



Media Water Flow Adjustment

Proper water flow over the media is important. Insufficient water flow will result in increased accumulation of minerals on the media. Excessive water flow will result in deterioration of the media and moisture carryover. The media water flow is adjusted as follows:

1. With the disconnect switch in the “OFF” position, place a jumper wire between electrical section terminals 80 and 82 This will energize the pump motor when the power is provided to the unit.
2. Use a jumper wire to energize the unit blower. Refer to the unit wiring diagram to determine location required.
3. Turn on power to the unit at the disconnect switch.
4. After allowing the blower and pump motor to operate for 15 minutes, adjust the media line flow restrictor so that the media is damp from top to bottom on the entering air side. If water flowing on the entering surface of the media is visible, the water flow rate is too high and must be reduced. Refer to the Approximate Evaporation Rate (GPM) calculated on page 3.
5. Turn off power to the unit at the disconnect switch.
6. Remove all jumper wires.

CONTROL OPERATING SEQUENCE

The following is the sequence of operation for the unit. Option and accessory control devices (Float switch, evaporative cooling thermostat, and/or fill and drain kits) are included only when ordered.

1. The evaporative cooler tank is filled at the beginning of the cooling season (See Maintenance-Water Tank Flushing). For units without the Accessory Fill and Drain Kits, the tank is filled by manually closing/opening the valves as described in Figure 3.1. For units with Accessory Fill and Drain Kits, the tank is filled each time the system switch is placed in the cooling mode (Refer to Steps 3, 4, 5, and 14).
2. The system switch is placed in the position to enable the evaporative cooler (e.g. Summer, Cool, etc.).
3. The freeze protection thermostat (if supplied) must sense an outside air temperature above the set point (Minimum 40°F) to energize the cooling circuit.
4. If an automatic time clock activated fill and drain kit is used, when the time clock is in the occupied mode, the SPST contact closes energizing the cooling circuit.
5. The fill and drain valves (accessory or by others) are energized.
   a. The normally open side of the 3-way fill valve closes to prevent water from draining and the normally closed side of the fill valve opens to allow water to flow to the evaporative cooler (See Figure 3.1).
   b. The normally open side of the 2-way drain valve closes to prevent the water in the evaporative cooler from draining (See Figure 3.1).
6. The low voltage cooling relay, which controls the pump motor, and the unit time delay relay, which controls the blower operation, are energized.
7. If the unit was supplied with an optional float switch, the float switch contact closes when the tank reaches the proper water level.
8. The evaporative cooling pump motor starts.
9. The time delay relay starts the blower after 30 to 45 seconds.
10. The evaporative cooling pump motor and the blower continue to operate.
11. For units with the evaporative cooling thermostat, the pump motor cycles on a call for cooling.
12. The system switch is placed in the Off mode.
13. The evaporative cooling pump motor stops.
14. The fill and drain valves (accessory or by others) are de-energized.
    a. The normally open side of the 3-way fill valve opens to allow water to drain and the normally closed side of the fill valve closes to prevent water from flowing to the evaporative cooler (See Figure 3.1).
    b. The normally open side of the 2-way drain valve opens to allow the water in the evaporative cooler to drain (See Figure 3.1).
15. The time delay relay stops the blower after 30 to 45 seconds.

OPTION AND ACCESSORY CONTROLS

Float Switch

The float switch is factory installed in the evaporative cooler electrical junction box. The switch includes a float level and contact that prevents the pump motor from operating until the water level in the tank has reached the required level.

Evaporative Cooler Transformer and Fuses

An evaporative cooler transformer and fuses are required for supply voltages of 208V/1Ph, 208V/3Ph, 460V/3Ph, and 575V/3Ph. Refer to Literature 5-572 or MAS5-572 – Installation and Service Manual – Options, for locations.

Evaporative Cooling Thermostat

The evaporative cooling duct thermostat (Penn A19AAF-12, 25°-225°F SPDT) cycles the pump motor based on a call for cooling in the is shipped loose for field installation in the discharge air stream. Refer to the unit job specific wiring diagram for low voltage field electrical wiring connections.

Fill and Drain Kits

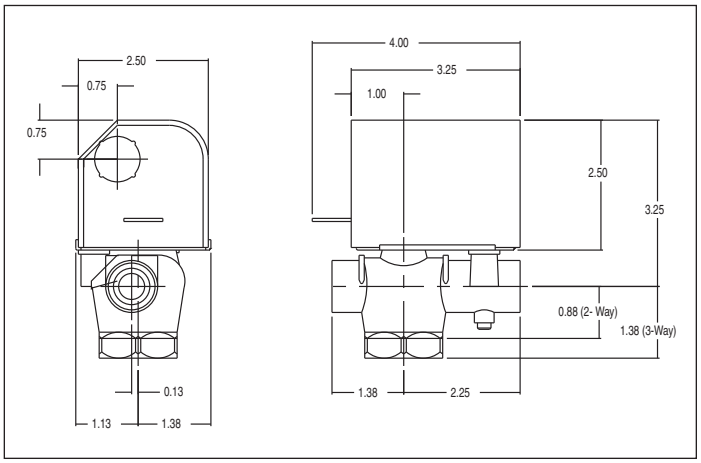
- **Manual Remote Operated Fill and Drain Kit**
  The manual remote fill and drain kit is used to prevent standing water in the evaporative cooling unit when not in the cooling mode. The kit provides cleaning and flushing of the evaporative cooler tank each time the system is placed in the cooling mode. Cleaning and flushing of the tank removes the build-up of mineral deposits from the tank. All fill and drain kits include low voltage (24V) valves, one 1/2" 3-way fill valve and one 1/2" 2-way drain valve for filling and draining of the evaporative cooler tank. The maximum water pressure for both valves is 50 psi. Refer to Figure 3.1 for locations of the field installed valves in the supply and drain lines.

- **Automatic Fill and Drain Kit**
  The automatic fill and drain kit is identical to the manual remote fill and drain kit but it also includes a 7-day push pin style appliance timer with single pole, single throw (SPST) switching. 12 settings per day with 2 hour per pin time increments. The timer power supply requires a separate line for 115V power. Refer to the unit wiring diagram for connections and Literature 5-582 – 7-day programmable time clock for mounting instructions.

- **Fill and Drain Kit Freeze Protection**
  Freeze protection can be included with both the manual remote and the automatic fill and drain kits. The freeze protection thermostat prevents the evaporative cooler tank from filling when the outside air temperature is below the thermostat set point (Typically 40°F).

  The freeze protection duct thermostat (Penn A19AAF-12, 25°-225°F SPDT) is shipped loose for field installation in a location that will sense the outside air temperature. Refer to the unit job specific wiring diagram for low voltage field electrical wiring connections.

Figure 6.1 - Dimensions - Fill and Drain Valves



EVAPORATIVE COOLER DIMENSIONS, WEIGHTS, AND PERFORMANCE DATA

Figure 7.1 - Evaporative Cooling Module

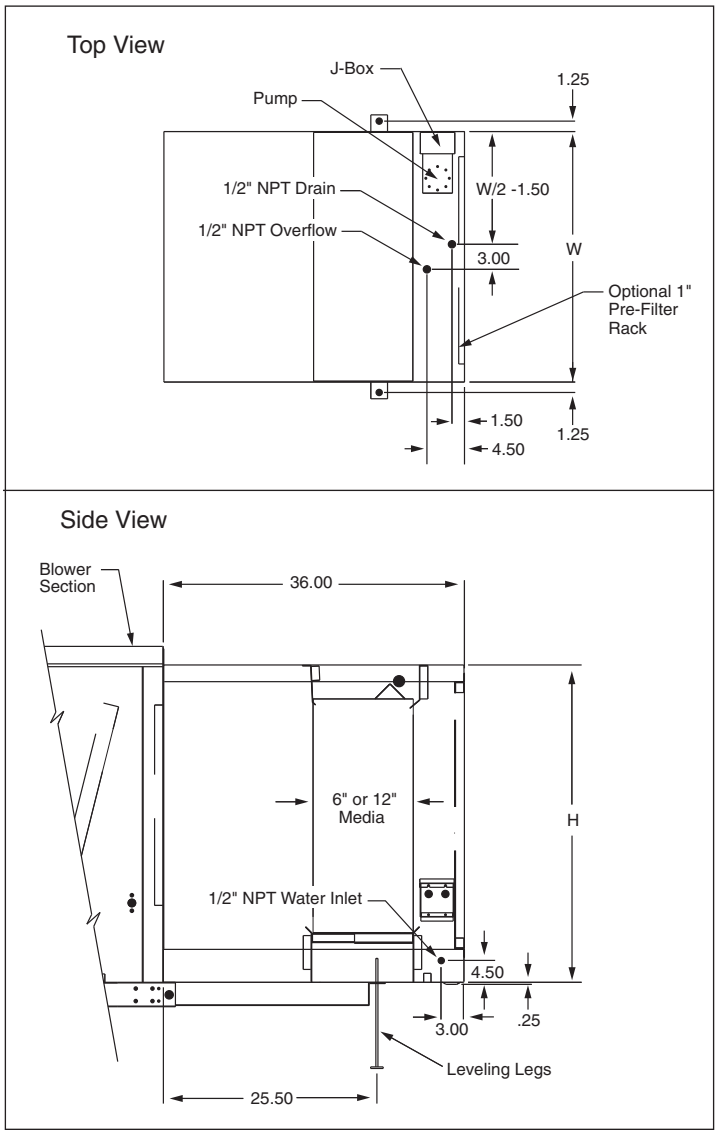


Table 7.1 - Evaporative Cooler Dimensional, Performance, and Weight Data (All dimensions in inches)

Model Size	Blower Type (Digit 16)	H	W	Maximum Cooling CFM	Media Face Area (ft^2)	Face Velocity at Max CFM (ft/min)	6" Media ① (Digit 23 = 3, 5, A, or C)		12" Media ① (Digit 23 = 4, 6, B, or D)	
							Dry Weight	Operating Weight	Dry Weight	Operating Weight
75	All	34	30	2778	4.0	695	149	273	154	285
100/125	All	34	30	4000	5.0	800	154	280	159	295
150/175	All	34	36	5200	6.5	800	159	313	169	336
200/225	All	38	36	6000	7.5	800	164	318	174	341
250/300	E,F,G, or H	38	39	6500	8.1	800	171	338	182	363
250/300	I, J, or K	56	39	10400	13.0	800	200	371	214	404
350/400	E,F,G, or H	38	51	8500	10.6	800	211	433	228	473
350/400	I, J, or K	47	51	11050	13.8	800	225	450	244	496
500/600	G or H	38	39	6500	8.1	800	171	338	182	363
500/600	I, J, K or L	56	39	10400	13.0	800	200	371	214	404
700/800	G or H	38	51	8500	10.6	800	211	433	228	473
700/800	I, J, K or L	47	51	11050	13.8	800	225	450	244	496
840/960	I, J, K or L	47	51	11050	13.8	800	225	450	244	496

① All weights in pounds.

MAINTENANCE

The evaporative cooling unit should be serviced before each heating/cooling season to assure proper operations. The following items may be required to have more frequent service schedule based on the environment in which the unit is installed, and the frequency of the equipment operation.

Water Tank Flushing

Clean the water tank of the evaporative cooling unit by flushing it out weekly with fresh water. Refill the tank and adjust the float valve so that the water level will be up to 1/4" below the top of the overflow pipe. If the float valve is not operating properly, a new assembly is available from the factory.

Evaporative Cooling Media

The evaporative cooling media should be checked annually for dry spots, scale, and algae formation. Normally, the media water will flush debris and dirt from the face of the media. To remove scale and algae deposits, dry the pad completely and brush up and down with a soft bristled brush. Do not brush side to side. Test a small area first to make sure the media can withstand the brushing. If the deposits cannot be removed, the media should be replaced (See Media Replacement). Average media life expectancy is five cooling seasons.

Birdscreen and Optional Pre-Filters

The birdscreen should be cleaned at the beginning of each year so that any debris that may have been caught will not restrict the air flow to the unit.

If the unit was supplied with optional pre-filters, the pre-filter should be checked monthly. Clean or replace if necessary. In dirty atmospheres, filter maintenance may be required more often.

Pump Assembly and Water Flow

Check the pump assembly operation and water flow. Ensure proper water distribution across the media (See Start-Up, Media Water Flow Adjustment).

Blower Assembly

Refer to Literature 5-572 or AIR5-572 - Installation and Service Manual for blower assembly maintenance instructions.

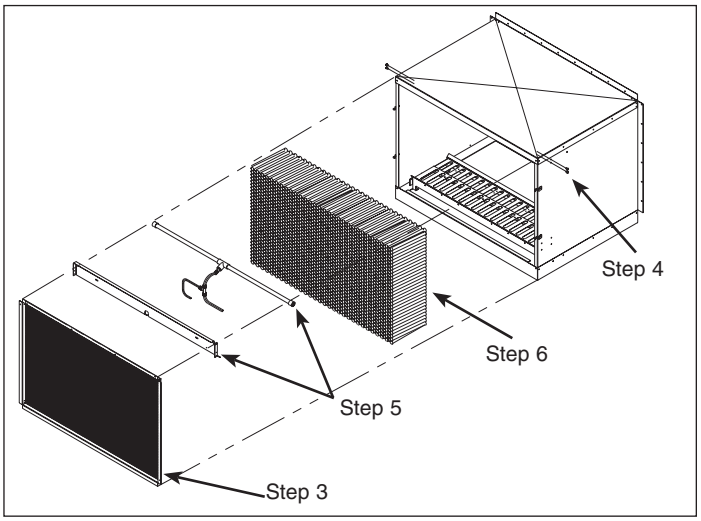
Electrical Wiring

The electrical wiring should be checked annually for loose connections or deteriorated insulation.

IMPORTANT

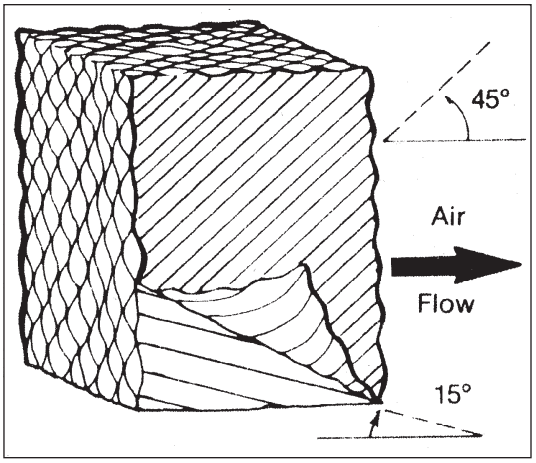
The proper media direction must have the 45° flutes slope down toward the air entering side. The 15° flutes must slope down toward the air leaving side. See Figure 8.2 for media direction.

Figure 8.1 - Media Replacement



1. Turn off power to the unit at the disconnect switch.
2. Close the water supply valve and open the drain valve to drain the evaporative cooler.
3. Remove the birdscreen.
4. Remove the four screws (two on each side) that support the front media support plate.
5. Remove front media support plate. The electrical cord will hang loose. Remove the V-shaped water distribution plate and attached piping from support pins.
6. Remove/replace the media with the correct media. To determine the media provided with the unit, see Model Nomenclature. When replacing the media, the configuration of the media in the evaporative cooler is important. See Figure 8.2 – Media Direction.
7. With the media installed, replace the front media support plate and the water distribution piping. Ensure that the electrical cord and bushing are properly located in the U-shaped notch in the front media support plate.
8. Replace the four screws removed in Step 4.
9. Replace the birdscreen.
10. Open the water supply valve and close the drain valve to fill the evaporative cooler.
11. Turn on power to the unit at the disconnect switch.

Figure 8.2 - Media Direction



SERVICE & TROUBLESHOOTING

⚠ WARNING

1. When servicing or repairing this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting Modine Manufacturing Company. Refer to the rating plate on the unit for complete unit model number, serial number, and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.
2. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
3. Do not submerse the pump motor in water. The evaporative cooler pump motor is not submersible.

⚠ CAUTION

Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.

IMPORTANT

To check most of the Possible Remedies in the troubleshooting guide listed in Table 9.1, refer to the applicable sections of the manual.

Table 9.1 - Troubleshooting

Trouble	Possible Cause	Possible Remedy
Tank does not fill or remain filled.	**1.** Main water supply valve is not open.	**1.** Open main water supply valve.
	2. Optional fill valve does not open.	**2.** Check wiring to fill valve. Replace valve if necessary.
	3. Float valve stuck in closed position.	**3.** Check/adjust float valve.
	4. Drain or overflow leaking.	**4.** Check piping for leaks. Tighten if necessary.
	5. Tank leaking.	**5.** Check tank for leaks. Silicone if necessary.
Pump does not run when system switch is placed in the cooling mode. (Tank is full)	**1.** System does not have power.	**1.** Check supply power and control transformer.
	2. Opt. time clock in unoccupied mode.	**2.** Set time clock to occupied mode.
	3. Thermostat not calling for cooling.	**3.** Set thermostat above discharge temp.
	4. Float Switch is not contacting.	**4.** Check/adjust float switch.
	5. Defective pump.	**5.** Replace pump.
Media has dry spots.	**1.** Insufficient water flow rate.	**1.** See Media Water Flow Adjustment.
	2. Distribution line blocked.	**2.** Check the distribution line for obstructions.
Water dripping off media.	**1.** Excessive water flow.	**1.** See Media Water Flow Adjustment.
	2. Worn or dirty media.	**2.** Clean or replace media.
Water blowing off media.	**1.** Excessive water flow.	**1.** See Media Water Flow Adjustment
	2. Media installed incorrectly.	**2.** See Media Replacement.
	3. Air velocity to high.	**3.** Adjust blower speed below Max cooling CFM. See Performance Data.
	4. Worn or damaged media.	**4.** Replace media.
Media contains debris and scale.	**1**. Bleed line clogged.	**1.** Check the distribution line for obstructions.
	2. Bleed line not adjusted.	**2.** See Bleed Line Adjustment.

MODEL NOMENCLATURE / SPECIFICATIONS

Model Nomenclature for Evaporative Coolers

Refer to Literature 5-572 or AIR 5-572 - Installation and Service Manual for complete Model Nomenclature descriptions. Digit 22 of the Model Number (Located on the Model Identification plate) defines the evaporative cooler media type based on the following numbering system:

Digit 22 – Evaporative Cooling (EC)

3 – 6" Munters CELdek® Media
4 – 12" Munters CELdek® Media
5 – 6" Munters GLASdek® Media
6 – 12" Munters GLASdek® Media
0 - None

A - 6" Munters CELdek® Media, Stainless Steel Cabinet
B - 12" Munters CELdek® Media, Stainless Steel Cabinet
C - 6" Munters GLASdek® Media, Stainless Steel Cabinet
D - 12" Munters GLASdek® Media, Stainless Steel Cabinet

Table 10.1 - Media Specifications

	Media Specifications	
Condition	**Munters CELdek ®**	**Munters GLASdek ®**
Base Sheet	Cellulose	Glass Fiber
Maximum Water Temperature	130°F	130°F
Maximum Air Temperature	300°F	300°F
pH Range	6-9	6-9
Dry Weight (lb/ft^3)	2.4	1.4
Wet Weight (lb/ft^3)	5.6	7.0
Operating Weight (lb/ft^3)	6.0	9.0
Water Load (gpm/ft^2)	1.5	1.5
Maximum Pack Size (DxWxH)	12" x 12" x 72"	12" x 12" x 72"
Fire Rating, UL	None	900 Class II
Flame Spread Index, E84-81a	450	5

Table 10.2 - Pump Motor Specifications

		Digit 14=A, B, D, F, or G (115V/1, 208V/1, 208/3, 460V/3, 575V/3) ①				Digit 14=C or E (230V/1 or 230V/3)			
		6" Media		12" Media		6" Media		12" Media	
Model Size	**Digit 16 (Blower Type)**	**Motor HP**	**Pump Amp Draw**	**Motor HP**	**Pump Amp Draw**	**Motor HP**	**Pump Amp Draw**	**Motor HP**	**Pump Amp Draw**
75	All	1/70	0.8	1/70	0.8	1/70	0.4	1/70	0.4
100/125									
150/175	All	1/70	0.8	1/50	1.0	1/70	0.4	1/50	0.5
200/225									
250/300	E, F, G, or H								
350/400									
500/600	G or H								
700/800									
250/300	I, J, or K	1/70	0.8	1/30	1.1	1/70	0.4	1/30	0.6
350/400									
500/600	I, J, K, L								
700/800									
840/960									

① For 208V/1, 208V/3, 460V/3, and 575V/3 units, the pump motor operates at 115V/1. A 250 VA transformer is supplied to step down the voltage.

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Commercial Products Group • Modine Manufacturing Company • 1500 DeKoven Avenue • Racine, Wisconsin 53403-2552
"H" Model Series - Phone: 1.800.828.4328 (HEAT) • Fax: 1.800.204.6011
"O" Model Series - Phone: 1.866.823.1631 (Toll Free) • Fax: 1.800.204.6011
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